

AFRL technology lends support to Allied Forces

by Fred Coleman, AFRL headquarters

WRIGHT-PATTERSON AFB, OHIO — When people think of Operation Allied Force, they usually think of the Air Force participants being the operational weapon systems and support staff shown on the nightly television news clips. They tend to overlook the years of technology efforts which underpinned those critical capabilities operated by the war-fighter, as well as the real-time technical support provided by our scientists and engineers to war-fighters in Kosovo.

The Air Force Research Laboratory made several critical contributions and was an active participant in many stages of the recent contingency operations in Kosovo.

“Our superior technologies gave us superior advantages in Operation Allied Force,” said Maj. Gen. Richard Paul, commander of AFRL. “I’m extremely proud of the role our people played, and AFRL was proud to be part of the Operation Allied Force team.”

People in Human Effectiveness Directorate were part of a team deployed to Ramstein Air Base, Germany, to develop tools needed to support the Kosovo bed-down operations. Human Effectiveness developed the Survey Tool for Employment Planning (STEP), which automates base support planning processes, and the Bed-down Capability Assessment Tool, which is used in conjunction with STEP. These tools allowed U.S. forces to compare bed-down location capabilities, analyze short falls, and assess parking, munitions, billeting, messing and other capabilities.

Researchers in Sensors Directorate helped develop a Joint Targeting Workstation (JTW) for processing off-board targeting information, increasing the effectiveness in finding ground targets. The JTW receives radar imagery and target location and transmits this to aircraft in seconds. The ground station component of this JTW was deployed as part of Aeronautical Systems Center’s Rapid Targeting System, known as Gold Strike.

The Materials & Manufacturing Directorate responded to an urgent request from Air Combat Command to provide six All-purpose Remote Transport Systems to support Kosovo operations. These low-cost, survivable robotic platforms are capable of a variety of remote operations and can detect, analyze, and render safe large explosive devices and can clear unexploded ordnance.

Following an urgent need to provide Night Vision Imaging System compatible cockpit lighting for a number of aircraft, HE researchers provided a timely, cost-effective solution. Having previously designed and evaluated a light-emitting diode-based lighting kit, the directorate sped up on-going designs and set up a production facility to meet these needs.

The Munitions Directorate developed an Inertial Measurement Unit (IMU) used in the Joint Direct Attack Munition (JDAM), delivered by B-2s in Kosovo. The JDAM is a tail kit which attaches to warheads and changes ordinary bombs into extremely accurate “smart” bombs. The IMU improves accuracy and gives JDAM an all-weather capability.

Munitions Directorate researchers also developed the Advanced Unitary Penetrator (AUP) used in Operation Allied Force. The AUP has a Hard Target Smart Fuze, which gives it twice the penetration capability of a normal hard-target warhead. It’s capable of counting layers and voids (floors), calculating distance traveled and exploding when it reaches a pre-determined floor.

When the Air Force Civil Engineer requested a rapidly deployable revetment system for Kosovo, ML responded with the Hesco-Bastion Concertainer Defense Wall System. These concertainer wall sections are constructed from geotextile-lined galvanized wire mesh panels, and can be filled with earth, sand, or gravel to provide protection from blast, ballistic and fragmentation threats.

The Information Directorate also played a part in Operation Allied Force, deploying a Broadsword system which connected multiple, geographically separated intelligence and command and control information sources through a single web browser interface. This provided a first-ever capability to query these sources using geographic coordinates and to monitor critical areas of the theater.

Many of the aircraft involved in Kosovo were powered by engines that incorporated technologies developed under the Integrated High Performance Turbine Engine Technology Program. The Propulsion Directorate was one of several involved in this program and the Air

Vehicles Directorate developed technologies which improved aircraft tire life.

In addition to these technologies, AFRL's expertise in battle damage repair, eye protection from lasers, and night human vision factors were crucial in meeting the needs of the warfighter in Kosovo. Operation Allied Force further demonstrated the need for technologies now under development at AFRL, such as ones for finding camouflaged targets and improving target identification capabilities from

high altitudes.

"Maintaining the technological advantage which keeps U.S. forces the best in the world, requires an investment in research and development areas which support known and as yet unknown future capabilities," Paul said. "These efforts by the unsung heroes of the Air Force Research Laboratory helped win the victory in Kosovo, and will continue to ensure U.S. technological superiority in future endeavors." @